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ABSTRACT

The purpose of this study was to determine the relative effectiveness of two teacher-administered rewards, money and praise, on reading subskills of 32 adult illiterates enrolled in adult basic education classes. These subskills were word recognition and paragraph comprehension. Correct responses were rewarded immediately with money, praise, or both, after a no-reward baseline period. These responses were also recorded during a subsequent post-reward period. The performance of correct responses on reading tasks was substantially higher when followed by money (five cents per response) or by money combined with praise than when followed only by verbal praise. This effect persisted after withdrawal of rewards. The success of specific incentives for acquiring skills in reading may depend heavily on teacher acceptance of those rewards. (Author)

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FINAL REPORT

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THE EFFECTS OF VERBAL AND MONETARY INCENTIVES
ON READING IN ADULT ILLITERATES

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The performance of correct responses on reading tasks was substantially higher when followed by money (five cents per response) or by money combined with praise than when followed only by verbal praise. This effect persisted after withdrawal of rewards. The success of specific incentives for acquiring skills in reading may depend heavily on teacher acceptance of those rewards.

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INTRODUCTION

A major problem for adult basic education is a lack of information about the motivation for learning of functionally illiterate adults. Of equal concern is the problem of how to teach these students literacy skills quickly and effectively.

If the goals of ABE programs are to be achieved, it seems imperative to determine the kinds of incentives to which disadvantaged adult learners are responsive. It is particularly important to discover the relative effectiveness of the rewards used by teachers in their classrooms on the development of literacy skills by these adults. The adult illiterate or semi-illiterate learner may have little intrinsic motivation to achieve in school situations. It is doubtful that he strives to satisfy the intellectual curiosity assumed to characterize the more advantaged learner. And, he often enters the classroom with a history of academic failure, shame, and distrust of teachers. We do not know what the adult functional illiterate is capable of learning when he is highly motivated.

Verbal statements are usually the only kind of reinforcements available to classroom teachers on a day-to-day basis. One might suspect that these incentives have a limited impact on learning in the adult disadvantaged. For, some of these learners typically have experienced only punishment in classroom situations. Also, they may prefer non-verbal to verbal communications. Nevertheless, verbal reinforcements are known to be a potent influence on the behavior of some learners. They can be adapted readily by teachers to fit the learning situations at hand. They provide a means for investigating a much broader spectrum of behaviors relating to "classroom climate." This is an important function as specific classes of teachers responses are associated with a much more complex set of behaviors connoted as personality, teaching style, and so on. The influence of social rewards on learning depends on the contexts in which they appear. Since the critical contingencies for the effectiveness of teacher praise are unknown, the influence of verbal rewards must be systematically examined under experimentally controlled conditions. Cash incentives, while not ordinarily administered by classroom teachers, are included in this project for two reasons. First, they provide a standard of comparison for social or verbal rewards. Second, their use indirectly tests an assumption that adult illiterates will learn if they are paid for going to school.

The development of effective educational programs for adult functional illiterates is hampered by a lack of information about the classes of incentives which motivate them to learn new and difficult skills. On the other hand, there is considerable evidence indicating that traditional rewards for learning in academic situations do not operate in the case of the disadvantaged. These traditional incentives include social reinforcements, particularly attention and verbal approval from a teacher, and the intrinsic enjoyment of learning for its own sake. Material rewards for learning in school situations are usually delayed ones, obtainable only after years of effort.

The disadvantaged adult holds negative attitudes toward education as a means of improving his status (2, 11). He has typically experienced failure in school situations, he has difficulty communicating with teachers (2, 4, 16) and he lacks confidence in formal groups and institutions (10). In addition, he is very often defensive about his lack of education and will go to great lengths to conceal his illiteracy (4). His attitudes toward authority figures, including teachers, are hostile and rejecting (9). His self-concepts are similarly negative (4, 27) and often he believes himself incapable of anything except failure (6). Furthermore, he emphasizes immediate material needs, not future rewards (23). And, he communicates in the non-verbal mode of his subculture (2).

Curiously, the effectiveness of cash incentives in facilitating learning is seldom studied systematically. These rewards are apparently assumed to be of value, for public assistance programs frequently offer monetary payment for participation in various educational and training programs. However, these programs do not emphasize contiguity of response and reward, so that learning and the receipt of money often occur far apart in time. Nor does this practice permit much satisfaction to be derived from cash rewards for learning. The money received by persons on public assistance usually is committed far in advance to basic necessities, and the need for it generally far exceeds the amount offered.

An unpublished study of the effects of money on learning among these persons showed that it led to the acquisition of new words (Haimowitz, personal communication). Illiterate adults in an ABE program received a

nickel for each new word they spoke aloud after exposure to programmed reading materials. Nearly every adult tested learned to recognize written words for this incentive, after failing to do so with other classroom incentives. Cash incentives may also improve the scores of adult illiterates on the Grey Oral Reading Test (21).

PROCEDURES

The specific objective of this project was to determine the relative effectiveness of three classes of incentives used by teachers in their classrooms upon the development of specific reading skills by adults in basic education classes. The incentives consist of verbal approval, money, and both approval and money.

Subjects: Thirty-two persons attending seven adult basic education (ABE) classes in northern Illinois served as subjects. It was an extremely heterogeneous group but was representative of the population of students in that part of the state in terms of sex, race, age, and other demographic characteristics. The sample was selected through contacts with all directors of ABE programs in Illinois. About five per cent of these directors agreed to ask their teachers to cooperate in the project. Seven teachers out of a total of fifty-five contacted agreed to participate in the experiment. These teachers were divided among three ABE centers and taught ABE classes full-time. Because of the teacher selection procedures, it is doubtful that the sample was random.

Rewards: The 32 subjects were randomly assigned by classes to one of three reward groups consisting of money, verbal praise, and money plus praise. A "no-reward" control group was omitted because pre-testing indicated that teachers could not withhold all reinforcement for correct student responses. The rewards were dispensed by teachers with 3 teachers giving money, 2 giving praise only, and 2 giving money and praise for correct responses. Ten subjects received money only, eleven received praise only, and the remaining ten received both incentives.

All rewards were dispensed immediately after correct responses during each of ten consecutive 50-minute classroom sessions. A tally of correct responses was kept during each session by teachers and students and checked for consistency between them at the end of each session. After considerable pre-testing, a belt kind of coin dispenser was used with money rewards, the student taking his or her own money from it which was five cents for each correct response.

Students in the verbal praise group received statements of praise and approval from the teacher immediately after they made a correct response. The specific statements varied depending on the vocabulary of the student.

All statements conveyed teacher approval and acceptance in a form meaningful to the particular class. The verbalizations included favorable statements about the student's capacity to learn in general, as well as his immediate behavior. Incorrect responses made by students were corrected, but were not criticized in any way.

Students in the combined verbal-money reward group received both praise and money for correct responses according to the procedures described above.

Measurement of reading skills: Two reading skills were studied. These were word recognition and paragraph comprehension. Word recognition was defined as adequate oral pronunciation of single written words not previously included in the student's oral vocabulary. This behavior is commonly included in a group of responses called word analysis (19) or word attack skills (14). That is, the student must master a variety of auditory and visual discriminations in order to correctly pronounce unfamiliar words. These discriminations rely heavily on phonics but also include structural and contextual analyses.

Paragraph comprehension was defined in this project as the ability to describe orally the main ideas of written sentences. This skill represents a more advanced achievement than the previous responses and is a major objective of reading instruction (14).

Each participating teacher maintained a tally of the total number of correct word recognition and paragraph comprehension responses emitted at each class meeting by each student during the entire duration of the project. A correct response was defined as (a) one which met the operational definitions of each response category, (b) which appeared after exposure to new learning materials and/or (c) which, to the best of the teacher's knowledge had not been previously used by the student. These responses will be tabulated continuously for four consecutive months.

Experimental design: Assessments were made at three points in time of the effects of the three reward conditions on two reading subskills. The three points were before the introduction of rewards (pre-reward period) during the presentation of rewards (reward period) and after the withdrawal of rewards (post-reward period). Each period consisted of 10 consecutive hours of classroom time spent in reading activities. The dependent variables analyzed in each period were the total number

of new words spoken and the total number of new, main ideas of sentences described orally. These variables were analyzed in a factorial analysis of variance with repeated measures. The main effects were reward category (3), reading task (2), and treatment periods (3). Because of the small sample size, the data were not analyzed by demographic characteristics of students.

RESULTS

There were no significant differences in pre-incentive scores on either task, indicating that the groups had similar reading skills prior to exposure to specific reward treatments. However, subjects made about half as many paragraph comprehension responses as word recognition responses prior to treatment, presumably because the former was a more difficult task. Over the three treatment periods, the main effects of treatment period, reward, and task were significant. For trials, $F=32.13$ $df=2$, $P > .01$; for incentives, $F=24.37$, $df=2$, $p > .01$, and for task, $F=36.18$, $df=1$, $p > .01$. The interaction between treatment period and reward category was also significant ($F=5.26$, $df=4$, $p > .05$).

A comparison of the group means shown in Tables 1 and 2 indicates that subjects in the money and money-praise groups made more correct responses on both tasks than did subjects in the verbal praise group. However, all groups produced more correct word recognition responses than paragraph comprehension responses. The reward task interaction was not significant, indicating that performance on the reading skills is similarly affected by the treatments.

The post-incentive period data indicate a drop in the means of all three treatment groups (See Tables 1 and 2). The word recognition performance of subjects in the verbal praise group was most affected by withdrawal of reinforcement while paragraph comprehension performance of subjects in this reward group was least affected. For the post-reward period, performance on the word recognition task remained better than performance on the paragraph comprehension task and the groups receiving money or money plus praise out-performed the praise-only groups on both tasks.

Because they dispensed the rewards, the cooperating teachers were an important variable in the project. All participating teachers had favorable attitudes toward the project and toward the use of material incentives in the classroom. Those teachers who were opposed to the project selected themselves out of it, which obviously biases the results. Most of the cooperating teachers treated the project as a game in which they participated equally with their students. In addition, the teachers were sympathetic to the concept of scientific research and were willing to undergo the training necessary to carry out the study as well as to maintain the required records and procedures during the project.

Teachers were rated by two observers prior to and during the experiment to establish the reliability and frequency with which they employed the proper incentives. These observations led to a prolonged pre-experimental period and ultimately to considerable consistency in teacher behavior. Due to the small number of teachers involved, no attempt was made to analyze methods of reading instruction or other behaviors of teachers.

TABLE 1
MEAN WORD RECOGNITION
RESPONSES OF ALL SUBJECTS

<u>Experimental Period</u>	<u>Reward Group</u>		
	<u>Money</u>	<u>Praise</u>	<u>Money & Praise</u>
Pre-reward	22.4	26.5	29.2
Reward	69.8	45.3	72.8
Post-reward	60.7	33.4	70.1

TABLE 2
 MEAN PARAGRAPH COMPREHENSION
 RESPONSES OF ALL SUBJECTS

<u>Experimental Period</u>	<u>Reward Group</u>		
	<u>Money</u>	<u>Praise</u>	<u>Money & Praise</u>
Pre-reward	11.7	12.3	10.6
Reward	50.3	32.2	46.4
Post-reward	43.1	29.4	40.3

CONCLUSIONS

The results of this investigation clearly suggest a role for material incentives in the teaching of reading to adults. The development of word recognition skills as well as the ability to verbalize the meaning of sentences were enhanced by the presentation of money for correct responses. Money alone, or money combined equally with verbal praise enhances the performance of these skills, thereby indicating a somewhat general effect of these rewards under the conditions of this study.

Verbal praise by itself was not nearly as effective a reward as money given immediately after correct responses. These data can perhaps be expected on the basis of evidence described earlier that the adult illiterate is often suspicious of teachers, communicates in non-verbal modes, and emphasizes material needs. Most of all, the illiterate adult learner is usually economically impoverished and it makes sense that he would be highly attracted to immediate monetary rewards for his performance.

It may be useful to recognize that in this study, performance of the two skills under investigation held up fairly well after the withdrawal of rewards. That is, extinction was relatively slow for subjects rewarded with money or verbal praise and money. It was equally slow for paragraph comprehension previously rewarded by verbal praise alone. This result may indicate only that performance on this task was minimal with praise as a reward.

These findings must be tempered by a recognition that the sample of learners was probably non-random, for it was pre-determined by the self-selection of teachers who voluntarily agreed to participate in the project. The fact that most ABE program directors and teachers did not cooperate with the study suggests that those who did were unusual in some ways. Indeed, the nature of the study was such that teachers were eliminated if they were not able to offer the rewards according to the conditions set by the project. A number of teachers removed themselves from participation because they were hostile to the use of money as a reward for classroom performance, or because they could not accept the constraints of a research project on their behavior in the classroom. Obviously, nothing is known about the performance of students in these teachers' classes. Even the teachers who cooperated enthusiastically were unable to withhold all rewards, and for this reason it

was impossible to study a "no-reward" control group. Teacher acceptance of money rewards for classroom learning appears to be essential if these rewards are to be effective. If that is the case, the teacher's behavior and not the material reward may be the variable responsible for the present findings. On the other hand, the students seemed to enjoy receiving money as a classroom "game." Some students commented that it was "fun" and "not like school" suggesting that the use of money rewards may have altered considerably the normal classroom protocols.

The novelty of receiving money for reading responses may also have affected these findings. The findings for the post-reward period mitigate against this conclusion, however, a Hawthorne effect was probably present. Students were obviously aware of the changes in classroom protocol brought about by the study and they have responded primarily to those differences. The value of the project may be to suggest that the use of money directs attention to the learning situation. And, attention focused on rewards for learning, whatever those rewards may be, is an important variable in the performance of adult illiterates.

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